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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,016	09/11/2003	Andrew G. Jenkins	X-1418 US	5910
24309	7590	08/24/2005	EXAMINER	
XILINX, INC ATTN: LEGAL DEPARTMENT 2100 LOGIC DR SAN JOSE, CA 95124			SIEK, VUTHE	
			ART UNIT	PAPER NUMBER
			2825	

DATE MAILED: 08/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/660,016	JENKINS, ANDREW G.	
	Examiner	Art Unit	
	Vuthe Siek	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-13 and 20-26 is/are allowed.
- 6) ☒ Claim(s) 1-6, 14-19 and 27-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to application 10/660,016 and response filed on 6/8/2005. Claims 1-34 remain pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6, 14-19 and 27-34 are rejected under 35 U.S.C. 103(a) as being obvious over Brown et al. (6,792,578) in view of Lee et al. (6,502,229) or Wang et al. (6,594,809).

4. As to claims 1 and 14, Brown et al. teach a method for correcting antenna violations in high-density integrated circuits comprising determining location of an antenna violation within a layout of a high-density IC; determining an affected input of a cell of the high-density IC based on the location of the antenna error in order to eliminate antenna violation by coupling the electrical connection between the top level metallic conductor and a diffusion region. Brown et al. do not teach identifying an available charge protection element and logically coupling the available charge protection element to the affected input of the cell. Lee et al. teach a method for inserting antenna diodes into an IC design during cell placement; therefore an available charge protection element (inserted antenna diodes) is selected and routed during ECO (engineering change order) process at input nodes of cells in order to eliminate or

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correct an antenna violation (Fig. 1-8, col. 5). Wang et al. teach correcting antenna violation by inserting antenna diodes within IC layout, thereby available antenna diodes can be used to couple between cells in order to avoid antenna violation (col. 3 line 53 to col. 5 line 30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine these above teachings in order to correct or eliminating antenna violation by selecting an available antenna diode (available charge protection element) and coupling the affected input of the cell that was accurately determined its location having antenna violation. This would be cost effective since there is no need to perform re-design of the IC design layout that is time consuming and costly.

5. As to claims 27 and 31, remarks set forth in rejecting claims 1 and 14 equally apply. In addition, Brown et al. teach inserting antenna diodes during initial cell placement (inserting antenna diodes during initial cell placement within the available space). Therefore, by combining these above teachings as described in rejecting claims 1 and 14, re-performing the place and route algorithm is necessary in order to coupling the available charge protection element (antenna diode) to the affected input of the cell to thereby eliminating antennal violation.

6. As to claims 2 and 15, remarks set forth in rejecting claim 27 and 31 equally apply because of similar claimed limitation.

7. As to claims 3, 16, 28 and 32, Brown et al. teach determining the affected input of the cell (input/output port of macro having antenna violation, Fig. 2, I/O port 32) comprising identifying circuitry within the cell corresponding to the location of the

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antenna violation; the affected input of the cell is the input of the circuitry within the cell (I/O transistor 36 within the macro, Fig. 2).

8. As to claims 4, 17, 29 and 33, Lee et al. teach determining a closest charge protection element to the affected input (col. 5) and Brown et al. also teach determining a charge protection element along a wire coupled to the affected input (Fig. 2, lines 34, 46 and 44).

9. As to claims 5 and 18, Lee et al. teach performing initial layout, inserting antenna diodes during cell placement and re-performing the place and route (Fig. 2-3 its description). In addition, remarks set forth in rejecting claims 27 and 31 equally apply because of similar claimed limitations.

10. As to claims 6, 30 and 34, all cited references teach using antenna diodes as the charge protection element or transistor.

Allowable Subject Matter

11. Claims 7-13 and 20-26 are allowed over the prior of record because the prior of record does not teach interpreting an IC error report (antenna error report) to obtain error coordinates and determining a cell of the plurality of cells based on the error coordinates and a design exchange format file and determining error position within the cell based the error coordinates.

Remarks

Applicant argued that the combination of teachings of Brown and Lee or Wang is not improper. Examiner respectfully submits the combination of teachings of these

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references is improper and the motivation of combination is provided. Brown teaches preventing or eliminating or correcting a detected antenna violation by coupling or connecting a metal wiring to an input port of a circuitry or macro. Lee and Wang also teach connecting or coupling available antenna diodes within a layout design to adjacent ones conductors to correct an antenna violation or error detected by a design rule checker. Therefore, combining these teachings would have been obvious to one ordinary skill in the art at the time the invention because this would correct a detected antenna error as expected without redesign an IC layout design that would be costly.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vuthe Siek whose telephone number is (571) 272-1906. The examiner can normally be reached on Increase Flextime.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vuthe Siek


VUTHE SIEK
PRIMARY EXAMINER